

**Abstract:**

The present invention relates to electrical separators for batteries, especially lithium batteries, having a shutdown mechanism and also a process for their production.

An electrical separator is a separator which is used in batteries and other arrangements in which electrodes have to be separated from each other while maintaining ion conductivity for example. Safety is very important in lithium batteries, since in contrast to other types of battery (Pb, NiCd, NiMnH) the solvent for the electrolyte is not water but a flammable solvent, for example organic carbonates. This is why it is absolutely necessary for a separator for lithium cells to possess a suitable shutdown mechanism and at the same time for it not to be able to melt down.

This object is achieved by an electrical separator according to the present invention that comprises a shutdown layer which is formed from a porous sheetlike structure. Since the separator further comprises a porous inorganic (ceramic) layer on a carrier, the cells cannot melt down as a result of a completely melted separator.

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An electrical separator for a lithium battery is composed of a porous carrier coated with a porous inorganic nonelectroconductive material and a porous shutdown layer on the porous inorganic nonelectroconductive coating. The shutdown layer melts at a selected temperature defined by layer composition. Upon melting, the pores of the inorganic layer are closed. Such an electrical separator provides a lithium battery of improved safety. A method to produce the electrical separator is provided.